

Remarks The applicant teaches how to improve the quality of reproduced environmental sound to a driver. The applicant's patentable contribution is a method for reducing the reproduction of sounds made by the host vehicle, thus improving the quality of reproduced sound. One element of this contribution is specialized signal processing that in combination with directional properties of microphones as placed on the host vehicle exploit the spectral characteristics of the sounds made by tires. These tire sounds are the predominant sounds of highway traffic.

One example of the specialized signal processing used in this technique is the "level-dependent filter" described in the applicant's application. Figs 13 and 14 show details of one implementation of a level-dependent filter that has been reduced to practice. Referring to fig. 13 of the application, op amps 134, 136, 142, and 150 are used to divide the audio spectrum into three parts. Field effect transistors 144 and 146 are used as voltage controlled resistors that change the gain of two of the three spectral regions. The signals from the three spectral regions are then combined by op amp 148 that sends the processed signal toward one of the loudspeakers. Fig. 14 shows how control signals for controlling gains can be formed by measuring signal intensity in a portion of the audio spectrum.

The modifications to claims 1 and 20, by describing a physical process employed by this specialized processing, make clear that this processing is not found in Press (US 3,626,365), Lehmann (US 6,731,204 B2) or Carter (US 2002/0150262 A1). In particular, Press column .3 lines 53-68 has the following differences from what the applicant claims. First, Press is not sending his signals toward loudspeakers. Second, Press does not automatically change gains of one part of the audio spectrum based on signal intensity of another part of the audio spectrum. Third, Press is not exploiting the directionality of microphones and the spectral nature of tire sounds to provide improved signal quality of environmental sounds reproduced constantly for the driver. Forth, Press is avoiding any response to ordinary traffic sounds by use of a conventional filter designed to block anything but the sounds of emergency vehicle sirens.

Summary All the rejections of applicant's claims are based on using Press, Lehmann, and Carter for rejecting claims 1 and 20. Since the applicant has made clear that his invention differs from Press, Lehmann, and Carter, all of applicants claims should now be allowed.



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Date: JULY 28, 2009

Inventor's Signature:

